Before the
Federal Communications Commission

In the Matter of	)	
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Restoring Internet Freedom	)	**WC Docket No. 17-108**
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Scott Bradner – Harvard University, Formally at Office of the CTO (retired)

Executive Summary

We are a group of Academics, Medical Informatics professionals and Internet experts from Saint Louis University, University of South Carolina, and Harvard University. The lead author (Dr. Gaynor) is a Professor of Health Policy and Management at Saint Louis

University. Dr. Lenert and Dr. Wilson are also professors. Scott Bradner has been involved in the development and management of the Internet since its beginning days.

We support a truly open Internet, and believe that innovation in medical care and informatics depends on it. The FCC's proposal would allow the creation of a multi-tiered Internet, stifling innovation in medical informatics, reducing the quality of care, and impede maximizing the value of Electronic Medical Records and sharing health information. Allowing big cable, telephone and wireless companies to pick winners and losers in the medical informatics and sharing of health care data market will not only harm the overall quality of clinical care it will also and be an impediment to new entrants in this important market to compete fairly with larger health care providers and vendors that may have business relationships with the cable and wireless companies themselves. University researchers would be especially negatively impacted since they are likely to not have the contacts in the incumbent providers that would be necessary to be enabled on a pay-extra-for-basic-use Internet , nor the resources to pay for the special handling.

We urge the FCC to sustain the existing, strong net neutrality rules, based on Title II of the Communications Act. The FCC should maintain bright line rules against blocking, throttling, and paid prioritization on both fixed and mobile connections, as well as maintain ongoing oversight of other types of discrimination.

I. Who We Are and What We Do

Gaynor, Lenert, and Wilson are university professors, Bradner retired from Harvard in 2016.

Mark Gaynor, PhD, MS, ME, MA is an Professor of Health Management, School of Public Health at Saint Louis University. Mark's PhD in Computer Science is from Harvard University. His research interests include distributed sensor networks for medical applications, innovation with distributed architecture, IT/HealthCare standardization, designing network based health care services, IT for healthcare, interoperability with HIT systems, and emergency medical services. His first book, Network Services Investment Guide: Maximizing ROI in Uncertain Markets, is in press with Wiley (2003)

Leslie Lenert, MD, MS, FACMI, FACP is is Chief Research Information Officer for the Medical University of South Carolina (MUSC), Professor of Internal Medicine, and Smart State Chair in Biomedical Health Informatics. He is the Chief Information Officer at Health Sciences South Carolina (HSSC), a statewide research collaborator. At MUSC and HSSC, Dr. Lenert is helping to change what is possible through the development of the infrastructure for a state-wide learning health system.

Dr. Wilson received both her MHA and her PhD degrees through the School of Public Health at Saint Louis University. Her PhD is in Public Health Studies with a concentration in Health Management and Policy. Dr. Wilson has many years of management, leadership, and population-level health experience in and with not for profit health care associations, health systems,

public/population health, coalitions, and other health care organizations. Her research focuses both domestically and globally on the intersection of health care management and population/public health, specifically with vulnerable populations; health systems strengthening; and the impact of health policy on organizations, specifically in areas of community benefit.

Scott Bradner was a Senior Technical Consultant in the Office of the Harvard University CTO. He is a frequent speaker at technical conferences and was a weekly columnist for Network World. Mr. Bradner served in a number of roles in the IETF. He was the co-director of the Operational Requirements Area (1993-1997), IPng Area (1993-1996), Transport Area (1997-2003) and Sub-IP Area (2001-2003). He was a member of the IESG (1993-2003) and was an elected trustee of the Internet Society (1993-1999), where he served as the Secretary to the Board of Trustees until 2016. Scott was also a member of the IETF Administrative Support Activity (IASA) as well as a trustee of the IETF Trust, also until 2016.

II. The FCC Should Sustain Its Existing Strong Net Neutrality Rules and The Existing Legal Framework Under Title II

The following comment is based on the author's two blog posts on the "Health Affairs" blog. - April 24, 2014 (http://healthaffairs.org/blog/2014/08/18/its-hard-to-be-neutral-about-network-neutrality-for-health/) and "It's Hard to Be Neutral About Network Neutrality for Health" and "Telecommunication Policies May Have Unintended Health Care Consequences posted on May 31, 2017 (http://healthaffairs.org/blog/2017/05/31/telecommunication-policies-may-have-unintended-health-care-consequences/).

It's Hard To Be Neutral About Network Neutrality For Health

Network Neutrality, reflects a vision of a network in which users are able to exchange and consume data, as they chose, without the interference of the organization providing the network basic data transport services. The second option, preferential service, entertains the possibility that the Internet could become what the National Journal describes as "a dystopia run by the world's biggest, richest companies." (http://www.nationaljournal.com/domesticpolicy/if-net-neutrality-dies-is-this-what-the-future-of-the-internet-will-look-like-20140527) However, the problem of network neutrality is more complex. Full network neutrality could also lead to a tragedy of the commons in which application developers compete for the use of "free" bandwidth for services to win customers while clogging networks and lowering performance for all.

Key stakeholders providing basic transport Internet service such as Comcast, Verizon, and AT&T, as well as and large Internet savvy content providers like Google have a clear understanding of the debate and what they stand to gain or lose from network neutrality. Lesser known and of potential concern is the extent to which other stakeholders -- especially those in the health care sector such as care providers (e.g. hospitals, academic medical centers, ambulatory care), cloud EHR vendors (e.g. Athenahealth, CureMD,

Practice Fusion), content providers (e.g. National Library of Medicine, universities offering distance health care related education), university-based researchers and others -- understand the implications of the network neutrality debate and outcomes.

Network Neutrality and Health Care

Network neutrality impacts the triple aim -- improving quality and the patient experience, reducing costs, and improving population health -- because virtually all of the information collected in these areas is transmitted through some type of Internet service provider. Leaders in health care must understand that how and when they access the Internet may shape the flow and type of information transmitted to them and even their patients. How will NN affect health care delivery and innovation to improve patient care while reducing costs? Does a user own his health data or does the network?

This commentary considers the effects of Network Neutrality on the adoption of general Telemedicine services including wireless monitoring of vital signs at home, the adoption of Personal Health Records (PHRs) and Electronic Health Records (EHRs), and access to health education for patients and providers.

In our article published in the January 14 issue of JAMIA, (http://jamia.bmjjournals.com/content/21/1/2.full.pdf+html), we define and discuss how NN may be considered with regard to health care:

"One particularly challenging policy question regarding health information exchange is deciding what businesses or services need to operate for the good of the public (rather than purely for private profit), and how they should be managed. There are some businesses or services of such absolute necessity to the public good—roads, water, electric utilities, and bridges—that they must be offered to the public in a non-discriminatory manner. For example, owning the only ferry with access to an island puts the owner in such a position that he or she could affect the economic well-being of many. Under the law of common carriage, the ferry owner must sell the services in a fair and unbiased way. Should health information exchange services operate in a similar manner?"

Network neutrality may still include concepts of prioritizing certain types of information through regulation. If so, health information deserves access to the fast lane. However, the FCC should insure a neutral approach based on *categories of service* rather than vendors prioritizing their own applications. This means that if the end user pays for a certain quality of service from the network (e.g. speed and delay in the network), they should receive that quality of service from the network provider from all content providers.

A World Without Network Neutrality

Without NN, patients and care providers are disadvantaged because the provider of the basic Internet service can dictate its choice of health care services. For example, Verizon would be able to give preference to network traffic from their Oncare home monitoring service, allowing Oncare to provide better service than competing home monitoring solutions. This could influence patient preferences based on the quality of the

network, not the features and attributes of Oncare compared to other similar medical services. One can imagine many similar conflicts in which patients and care providers might be influenced against picking a service that better meets their needs because of network attributes such as bandwidth (speed of the network) and latency (delay in the network).

Current FCC Actions

Currently we are seeing changes to the Federal Communications Commission's (FCC) stance about network neutrality (NN) and other important telecommunications policies that may significantly impact the delivery and pace of innovation in healthcare. The FCC, under the guise of "restoring internet freedom," believes that big telecom giants should be allowed to treat their business partners more favorably than other companies.

History suggests that the ideas of treating Internet access as a public good are not new. For example, there are laws preventing (https://www.britannica.com/topic/carriage-of-goods and http://www.lectlaw.com/def/c069.htm) owners of essential public goods such as shipping companies, bridges and ports from abusing their position. These same principles should also apply to the Internet because through its evolution, it has become essential. There is growing evidence that this is true for health.

Reverting back to a voluntary approach to NN potentially threatens the well-being of many people, particularly those at risk for health disparities due to low income or rural residency. Not only does this voluntary approach shift winners and losers to favor large telecommunication giants, we are specifically concerned with several areas of health care being negatively impacted, including innovative solutions for telemedicine, health enhancement and cost effective scalable sharing of health care data.

Rural Health Innovations Need Dependable Internet

Increasingly, telemedicine is being used to bring higher-end health care services to remote and rural areas to reduce health disparities. For telemedicine to be scalable and positively impact cost and outcomes, there must be a predictable infrastructure connecting patients, care providers, and technology. A prerequisite for telemedicine is broadband connectivity between telehealth sites. Reliable low cost service for telehealth is potentially threatened by the loss of NN. What happens to telehealth if Netflix traffic is preferred above medical applications? Could ISPs offer better services for one hospital system than another, helping them take over telehealth in a region? The undoing of NN weakens the infrastructure of reliable low cost connectivity that telehealth systems depend upon.

The FCC's existing framework works well. It should sustain its current approach under Title II; ban blocking, throttling, or paid prioritization of Internet traffic; and continue ongoing oversight of other discriminatory conduct.

Respectfully submitted,

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